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The Need of an Efficient Park Service.

NO matter how carefully a park may be designed or how completely it provides for the wants of all classes of the community, it must fail, of course, to serve its highest purpose unless the details of the plan are intelligently carried out. Skill in construction and maintenance is just as essential as sound common sense, creative faculty and refinement of taste in the design. In works of any magnitude it is impossible for the designer to do more than give general directions to the men in charge of the different branches of construction, and he must trust to their knowledge to interpret sympathetically the maps and drawings and other data furnished for their guidance. This is equally true as regards maintenance after the work of original construction has been accomplished. In a large system of parks like that of Boston or New York it is not possible for the superintendent to do more than pay a hurried visit to some of them once a week. A head foreman in charge of a park of considerable size can at the best spend but a small part of any day with each of the gangs of laborers under him. It is, therefore, plain that unless every foreman, besides the ability to manage men, has a thorough knowledge of every detail of the work going on under his control, there is no assurance that the park is growing along the lines marked out by its creator. Indeed, it is certain that his plan will be marred and his purpose defeated.

Of course, there must be an organized body of skilled gardeners in every park—men who know how to plant and prune, who have a knowledge of the essential laws of plant growth, who are familiar with the ways and habits of different species of trees and shrubs and herbs, so that the place that each one is to fill is understood. In some European countries it is not difficult to secure trained gardeners, but every one who has an estate to manage here knows how difficult it is to find them. It may be doubted whether any park in a city of considerable extent in the United States is adequately equipped in this line. But, besides gardening proper, there is much park work, such as repairing walks and roads, working among trees and shrubs, grading and sodding and matters of that sort, which requires a familiarity and skill in their details, and this skill only comes from long practice under careful supervision. Efficient park officers, from the superintendent down, and an organized corps of workmen who can be trusted always to do the right thing at just the right time are plainly essential to the proper maintenance of any park which has a design to grow up to and well-considered plans for making its charms most easily available to visitors.

Let us suppose that this truth had been realized by the commissioners who controlled and managed the New York parks thirty years ago, and had been held steadily in view by their successors. They would not only have always had a competent landscape architect and a general superintendent of executive force, adequate training and experience in his profession and a sympathetic appreciation of the artistic side of the work, but by a system of selection and promotion among the subordinates they would have had at disposal a thinking machine prepared to set itself to work at any moment and ready to meet any emergency. The history of the parks here, however, and it is paralleled, no doubt, by like experience in other cities, shows that they have been under the control of an ever-changing board of commissioners, most of whom have had little intelligent interest in parks or park management. Instead of clothing the superior officers with power and then holding them responsible for their subordinates, it has been the practice of the commissioners to look with jealousy on every exercise of independent authority by these officers as a mutiny against the supreme power of the board. Until very recent times the great bulk of the force has been selected by the political chieftains in the different wards, and too often the men, as soon as they had become sufficiently experienced to be useful, have been replaced by others who had no training whatever. All these facts are so well known that they sound like a tale of little meaning, but when we think of the square miles of park property owned by this city from Pelham Bay to the Battery and realize how its possible value can be depreciated by falling into unskilled hands, the subject of securing efficient park service is certainly worth the attention of the public-spirited people of the city.

A few days ago a visitor to one of the most beautiful and picturesque of our new and undeveloped parks noticed a gang of men turned loose by the wayside and pruning shrubbery with brush hooks. Not far from this was a blazing bonfire under a group of young Hemlocks. One slight puff of wind might have carried the flames into the dry foliage, and even if the wind did not come the heat from the fire would in a few moments have destroyed a dozen trees. Fortunately, there was authority at hand to arrest the progress of the flames at once, and on inquiry it was learned that this portion of the park was in charge of a new and highly recommended foreman who, on his own responsibility, was "clearing up things" in this wild fashion. It is stated, too, on authority that in all the force there is not a sufficient number of skilled foremen to place in independent charge of the different parks to carry on the ordinary spring work which must be done every year. One result of this lack of persistent and intelligent care is that there are parts of Central Park where the plantations already seem past their prime.

May we not hope that when the long-prayed-for millennium of municipal reform arrives every member of the force of our city parks, from the executive head down, will know just what ought to be done and how to do it, and that park commissioners will allow their employees to vote as they please, but will hold each man to rigid account for the special work he is selected to do.

AFTER the almost unparalleled destruction of property and of life by forest fires in Minnesota less than two years ago it is hardly to be wondered at that the new law against these fires in that state is the most effective of all that have been enacted in the various states of the Union. But the advocates of sound forest policy in Minnesota have

not rested here, they are making a determined move toward acquiring, in the name of the state, a large area on which it is proposed to restore and preserve the forest. We have received a circular containing a synopsis of the plan proposed by Mr. Judson N. Cross, of Minneapolis, at the meeting of the Forestry Association of Minnesota, held in January of this year, and since the plan is novel and has far-reaching possibilities, all persons to whom the circular is sent are requested to express their opinions as to the details and to send any recommendations for changes, together with reasons for the same, to the Secretary of the Association, Mr. J. O. Barrett, Brown's Valley, Minnesota.

The plan is essentially this: (1) The Legislature is to constitute state, county and town boards of forestry. For the sake of economy the town board of supervisors will act as a town forestry board, the county commissioners will constitute the county forestry boards, and the state forestry board of nine members is made up of the State Land Commissioner, the Professor of Botany in the Agricultural Department of the State University, the chief officer of the Climate and Crop Service of the United States Weather Bureau in Minnesota, and one member appointed by each of the following associations, namely, the State Forestry Association, Farmers' Institute, the Board of Regents of the University, the State Lumbermen's Association, the Board of Public Health and the Fish and Game Commissioners. These are to serve without pay, except for actual expenses, and an executive committee of three is to be selected by the entire board. (2) Owners of Pine lands which have been lumbered over and other lands, especially if they are rocky, rough or sandy, and will probably not be utilized for agricultural purposes for some years, may deed that land to the state when this course is recommended by the town and county forestry boards. This land is deeded for forestry purposes only, all rights in minerals, coal, oil, etc., being reserved. Land so deeded shall be exempt from taxes, because it is dedicated to public use. (3) This land shall be called the Reserved Forest Area, and it shall be under the charge of the State Forestry Board, who is to care for it as the Legislature may direct. (4) Of the future income to be derived from such lands, one-third shall go to the state to reimburse it and the towns and counties for care and protection and loss of taxes, one-third to the person deeding the land and his heirs for a period of, say, one hundred years, after which it is to go to some institution, the other one-third to go to some designated institution or the State University. (5) The state shall have full power to lease low meadow tracts where such are needed as protection against fire, or for pasture where this will not interfere with the growth of the forest-trees. It shall have power also to sell dead and down timber, which it is supposed when the adjoining lands are settled up will bring in a large income, and generally the state is to have full power of control, even the power of alienation of certain tracts when recommended by the State Board of Forestry in such cases, for example, as where the growth of towns, the building of railroads, water-power, etc., may necessitate such alienation.

Of course, this is the merest outline of the scheme, and we have omitted many of the details given in the circular. We call attention to it, however, as a step forward, that the great prairie states, as well as New York and those in the middle Appalachian region, are taking serious thought of securing and maintaining large areas in permanent forest. Experience in Europe and in India has demonstrated that such areas owned by the commonwealth will prove a source of revenue if properly managed. Besides, they will furnish examples which private forest-owners will be eager to follow. More than all, a community which is sufficiently far-sighted to take such action will see to it that the heights and slopes which are the sources of water-supply to the valleys below are kept covered forever as the only security against those disasters which the reckless destruction of forests on highland or lowland has invariably brought.

Clematis paniculata in a Wild Garden.

SOME time ago it was suggested in these columns that Clematis paniculata would be an admirable plant for use where it could clamber over wayside shrubbery, after the fashion of our native Clematis Virginiana, which never shows to such good advantage as it does when festooning a fence stake, or brightening with its flowers the dark foliage of the Viburnums or Dogwoods which support it. No doubt, this thought was suggested by having seen the vine making itself at home in the thickets on the borders of a pond in Westbrook, the estate of W. Bayard Cutting, Esq., on the shores of the Great South Bay, Long Island. But it was the Rhododendron season then, and one could only imagine what it would look like in September. On page 185 of this issue, however, is a picture of a portion of the border of one of the Westbrook ponds, taken when the Clematis was in bloom, and it shows the great abundance of its flowers and the graceful way in which it adapts itself to the spirit of the scene. A mass of Rhododendrons would become tiresome if they bloomed all summer, and the snowy glitter of these Clematis flowers would be oppressive if they opened in spring and continued until autumn. But, after all the shrubs have done flowering, this sudden burst of bloom in early autumn is singularly effective, and the cluster of gray feathers attached to the ripened seed later on are in perfect accord with the autumn colors of the foliage which accompany them.

These shores at Westbrook furnish many suggestions for a wild garden, by which we do not mean a garden left to run wild, but one planted and tended so as to give that appearance of untamed luxuriance, of careless and unstudied grace which suggests perfect freedom. Myricas and Dwarf Willows, Clethras and Ilexes, Beach Plums and Dogwoods and other shrubs native here unite to form that diversity and intricacy of growth, that mystery of shadow, that air of negligence or waywardness which belongs to the wildwood and gives no hint of "dressed grounds." The coarser and more aggressive species are watched and restrained, however, from oppressing and crowding out the more fragile and delicate kinds, and the picture shows that tall reeds and grasses have been introduced, and these against a background of soft masses of Pine leaves help to complete a very perfect picture. A little way back from the pond there is a secluded walk now approaching close to the shore and again receding from it and broadening out into a space for a rustic seat, where glimpses of the water can be caught through the dense leaves. Of course, the native shrubs that have been named, with many more, naturally form the great mass of the vegetation on the shore, for the world can furnish nothing more suitable and beautiful. But this Japanese Clematis is only one of the exotics which help to give variety to the picture. It is proved here that many of the wild single Roses of other lands, like Rosa Wichuraiana and R. multiflora, are adapted to this unconventional life as thoroughly as the Roses of our own swamps, and yellow Irises from Europe seem quite as happy amid these wild surroundings as our native Blue Flag. All this is art, but it is the art which conceals art. To create such a scene requires patience, a knowledge of plants and the prophetic eye of taste; but, after all, studies of this sort furnish one of the most satisfying diversions for the owners of country estates. There are many other places than the borders of ponds which are adapted to wild gardens of a type similar to the one figured here, but water, still or flowing, gives a distinct advantage in many ways, especially in the light and openness it secures and in the reflected pictures, broken or perfect, which it adds to the scene.

The Tannins of the Palmettos.

IN the many accounts of the uses to which the southern Palmettos are applied the reader is frequently left in ignorance as to whether the Scrub Palm, Serenoa serrulata,

or the Cabbage Palm, S. Palmetto, is intended. For information concerning the former, the papers by Dr. J. B. Read (*American Journal of Pharmacy*, 1879, page 169) and by Rusby, Bastedo and Coblentz (*Alumni Journal of the College of Pharmacy of New York*, 1895, page 169) may be consulted.

The Cabbage Palm has not been written about so much, nevertheless it is used extensively in a variety of ways; the Cabbage is a valuable article of food, and the wood is employed in constructing wharves and other works where a wood is needed to withstand the attacks of the teredo. Both Palms are used in the manufacture of brushes, brooms, etc., in which their fibre is available. One of the exhibits in the Agricultural Building of the recent Cotton States Exposition at Atlanta was composed entirely of products manufactured from the two Palmettos.

The reports which have circulated in regard to the tanning value of the Palmetto have, no doubt, always referred to the Scrub Palm, and excellent leather has been and is made from it. A recent sample yielded the following percentages on analysis:

	Moisture.	Ash in absolutely dry material.	Tannin in absolutely dry material.
Stem, above ground,	8.56	5.68	5.48
Root, ...	7 46	4.43	7.58

The stem examined was from above ground, and the root was a section of that part proper, and not of the underground stem.

The tannin is associated in the plant with a large proportion of red coloring matter, which has a tendency to make a dark leather. When finally separated the pure tannin gave reactions with iron salts and with bromine water, which indicated its close relationship with that from Oak bark. An ultimate analysis confirmed this by yielding the following percentages:

Carbon, ...	61.22
Hydrogen, ...	4.85
Oxygen, ...	33.93
	100.00

Something over a year ago a tanning extract made from the Scrub Palm appeared in the northern markets under the name of "syrup of tannin," but, as it contained a considerable quantity of the red coloring and not over seven per cent. of tannin, it did not find purchasers. Dr. Charles Mohr is authority for the statement that this extract industry has been abandoned. If a high-grade extract were offered at a reasonable price, there is no doubt but tanners could be found who would use it.

The question has often arisen about the tanning value of the Cabbage Palm, and recently, through the courtesy of Dr. J. H. Mellichamp, of Bluffton, South Carolina, two specimens have been received and examined. One was a section from a medium-sized tree five feet from the ground, and the other a section of the same tree a few inches below the sheaths of the living leaves near the top. On analysis they yielded the following percentages:

	Moisture.	Ash in absolutely dry material.	Tannin in absolutely dry material.
Section near ground,	10.04	7.80	1.79
" " top, . .	8.35	3 78	1 54

The section near the top, being more porous, dried out more rapidly in transit, and, therefore, yielded less moisture. The tannin percentages indicate that this species is not likely to ever have any value as a tanning agent. Some of the cortex was separated from the lower section, and it was found to contain just about the same percentage of tannin as the whole section.

The credit has frequently been given to tannin for enabling the wood of this Palm to withstand the attacks of the teredo when placed under water, but it is evident, from the foregoing figures, that this property must be attributed to something else.

College of Pharmacy, Philadelphia, Pa. *Henry Trimble.*

Foreign Correspondence.

London Letter.

FLORA OF SOUTH AFRICA.—Botanists and horticulturists interested in south African plants will be gratified to know that the *Systematic Flora* of that region, commenced in 1860 by Harvey and Sonder, but completed only as far as the order Campanulaceæ, is being carried to a conclusion at Kew under the direction of Mr. Thiselton Dyer. Part 1 of vol. vi. has just been published. Price, seven shillings and sixpence. The volume, of which this is the first installment, will be of more than ordinary interest, as it will include the whole of the plants familiarly known as "Cape Bulbs," which have been popular in gardens for a century or more. We owe to south Africa more beautiful garden bulbous plants than to all the rest of the world put together. Thus of Irideæ alone, of which there are between 700 and 800 species, about one-half of them are natives of south Africa. These occupy over 160 pages of the publication under notice, which has been entirely elaborated by Mr. J. G. Baker, who has long been the accepted authority on this and allied orders. Among the larger genera included are Gladiolus, 81 species; Moræa, 45; Babiana, 26; Tritonia, 32; Ixia, 23; Lapeyrousia, 24; Watsonia, 15. The descriptions are in English. The work is published by L. Reeve & Co., under the authority of the Governments of the Cape and Natal.

THE JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY for March contains several papers of exceptional interest. Mr. Francis Darwin has a paper on "Etiolation as a Phenomenon of Adaptation," in which the occurrence of white or bleached leaves or flowers in various plants is commented upon. Mr. Freeman-Mitford's valuable paper on hardy Bamboos will serve as a guide to the cultivation and an authority upon the nomenclature of these plants to those who do not possess his beautifully illustrated book upon them. Mr. A. W. Sutton contributes an account of the Potato from its introduction to its present development. His grafting experiments with the Potato and Tomato go to show that neither stock nor scion was affected by the union. Mr. Sutton is in a position to speak with authority upon the best varieties of the Potato as grown here now. Dr. Masters' paper on substitutes for Larch, which in the British islands is too often ruined by fungoid diseases, will be useful to foresters. The results of various trials at Chiswick among vegetables and flowers are given in better style in this number than before.

APPLES AND PEARS.—It is difficult for the would-be planter of only good sorts to make a selection from the hundreds that are grown and catalogued by dealers in fruit-trees. With a view to the formation of a definite list of the best varieties the Royal Horticultural Society offer this year special prizes for the best-flavored apples and pears. Six fruits of each variety must be shown, the judges to cut any three of them. The fruits must be grown out-of-doors and the place, conditions as to soil, etc., stated. If grafted the name of the stock must be given. The judges will allot points to quality, appearance and size as well as to flavor. Enormous specimens will not be preferred, as beyond a certain point size becomes a defect. A prize of ten shillings will be awarded to each apple. By this means it is hoped that an authoritative list of apples and pears of first-rate quality will be obtained. At present we are too much at the mercy of the dealer who supplies sorts which are said to be excellent, but which are too often worthless. Of course, the conditions under which the tree is grown are an important factor. I have in my garden trees that are generally admitted to be good, but which have never yet borne good fruit. [This subject was discussed on p. 161 of this volume.—ED.]

STREPTOCARPI.—The success of Messrs. Veitch & Sons in crossing and improving these plants has been marked, and this year they have some striking new seedlings. The monophyllous species, such as Streptocarpus Dunnii and S.

Wendlandii, are remarkable for their numerous flowers and bright colors, but they are unpopular with cultivators because of their ungainly leaves. The hybrids between these and the multi-leaved species, such as S. Rexii and S. Galpini, have several leaves, but they also are more or less one-sided. Three years ago Kew introduced a species with numerous large leaves and many-flowered scapes, known as S. Fanninii. This was crossed with other sorts, and from the hybrids thus obtained Messrs. Veitch have bred some most promising seedlings. It is impossible to say how far breeders may go with these plants. Already we have great variety of color, size and quantity of bloom, but it is evident that there are still better results within reach. The plants are very easily managed; they may be had in flower at any time of year, and their flowers are useful in various ways. Messrs. Veitch grow them by thousands planted out in frames facing south and heated to the temperature of an ordinary greenhouse. In the spring they are lifted and potted up to flower.

Hippeastrums.—These plants continue to occupy the attention of skillful cultivators and breeders, but I question if much improvement has been made in them in recent years. Certain changes in form, size or color blending have been made, but the flowers are often what may be justly termed inartistic, notwithstanding the satisfaction of the breeder when he produces a flower with broader segments or more fantastic colors. It is easy to carry these so-called improvements too far, as witness the dumpiness and total lack of elegance in the Chinese Primrose and Cineraria as now admired by fanciers. The Camellia was spoilt in the same way, so that we have gone back to the once despised singles and semidoubles. In my opinion, Hippeastrums may be too large in flower, and they may also be too formal in shape. I have lately seen new varieties valued at ten and even twenty guineas, which, although perhaps coming nearest the ideal of the florist, were less pleasing to the layman than varieties valued at as many shillings. Color improvement is after all the principal desideratum in the Hippeastrum; its original form is good enough. Several amateurs are now working with a view to better color, among them being the Right Honorable Joseph Chamberlain, M.P.

Caladiums.—These plants have grown in popularity in recent years. This is, no doubt, due to the improved varieties raised, chiefly, I believe, in France and Belgium, and also to their being wonderfully well grown by the two nursery firms which make a specialty of them, namely, Messrs. J. Laing & Sons, Forest Hill, and Messrs. J. Veitch & Sons, Chelsea. I saw a large houseful of them in the latter place a few days ago. The plants were in twelve-inch pots and were simply great globose masses of large, richly colored leaves of the most varied hues. Among the best of them were some new seedlings raised by the late Mr. C. F. Bause, one of the most skillful of breeders in England. These seedlings are remarkable for brilliancy of color and dwarfness of habit. They are named Her Majesty, Lady Mosley, L. Bause, Sir Henry Irving, etc. There are eleven of them altogether, and I see they are offered by Messrs. Veitch at prices varying from half a guinea to a guinea. Is it generally known that Caladiums are excellent plants for the tropical aquarium? Planted in a bed of mud, or in pots partially submerged in a tank of warm water they grow vigorously and color superbly.

Daffodils are now by far the most popular of all spring-flowering bulbous plants. Our public gardens are painted yellow with them, lawns as well as flower-beds being decorated with their flowers. New sorts are appearing almost weekly, and several specialists are devoting their gardens wholly to the cross-breeding of Daffodils. A conference and exhibition of Daffodils was held this week in the gardens of the Royal Botanic Society, Regents Park. Mr. Baker, F.R.S., presided, and addresses were given or papers read by such well-known authorities as Mr. F. W. Burbidge, M.A., Mr. W. Robinson and the Rev. S. Bourne. Magnificent collections of the flowers came from Messrs. P. Barr & Sons, the leading growers of Daffodils among nurserymen, Mr. T. Ware, Messrs. J. Veitch & Sons, and numerous amateur growers. Cups and medals were awarded for new varieties. Mr. Baker, in opening the conference, spoke of the enormous increase in the popularity of the Daffodil within the last twenty years, due, no doubt, largely to the fact that it was a democratic flower, responding to the attention of growers of the most limited means and yielding freely its flowers, which in form and color were artistic and pleasing. The reign of the Daffodil is assured.

London. *W. Watson.*

Plant Notes.

Acer cissifolium.—This Japanese Negundo has been fruiting in this country for many years, and we have invited attention to it in every volume of Garden and Forest, and yet in half a dozen catalogues of the leading nurseries of the country, which we have just examined, we do not find it offered for sale. We may add that the same is true of other trees and shrubs whose merits have been proved long ago in the Arnold Arboretum and made known again and again in these columns. This Box Elder is beautiful at all seasons, and being somewhat formal in habit and comparatively small, it is one of the limited number of desirable trees for planting as single specimens on a lawn. It is a compact round-headed tree with a gray trunk, slender, light green leaves in summer, which turn to brilliant orange and red late in autumn. The young shoots have a habit of growing and producing new leaves all summer, or, at least, long after other trees have finished their yearly growth; and these young leaves at the extremity of the branches, showing the delicate shades of red and pink which characterize spring foliage, give a peculiar sprightliness to the general expression of the tree. It grows rapidly and is more hardy than the Japanese Maples, which are varieties of Acer Japonicum and A. palmatum.

Andromeda Japonica.—Recent English horticultural papers speak of the beauty of this shrub as exhibited at the spring flower shows, and a correspondent of *The Garden* writes of great masses of it in flower at the Knap Hill Nurseries of Mr. Anthony Waterer and of a fine group of it by the Palm-house lake at Kew. In vol. vi. of Garden and Forest, page 254, Professor Sargent writes that the plant is a tree in its native home, where he had seen specimens thirty feet high with stout well-formed trunks six or eight feet in length. In our north-eastern states it grows rather more freely and has a more graceful habit than our native Andromeda floribunda, which is closely related to it, and when at its best, with its broad, drooping panicles of large white bell-shaped flowers, it is one of the most interesting of evergreen shrubs. It cannot be trusted to bloom, however, in our climate, although it is perfectly hardy, for the flowers open so early that they are almost certain to be killed by cold weather. Farther south, where it would flower in February, it would certainly be a most desirable shrub.

Rosa Lawrenceana.—The Fairy Rose, as this plant is appropriately called, is uncommon in cultivation, and Herr Leichtlin has but recently distributed it among plant fanciers. It is a double form of the white-flowered Rosa Indica minima, and while it may, perhaps, not prove perfectly hardy in this latitude, it is well worth cultivation by those who fancy dainty rather than big flowers. The plants make many-branched bushes, with very small leaves and dainty little pure white flowers less than an inch in diameter when expanded.

Cultural Department.

Vegetable Garden Notes.

THE month of April, 1896, must go on record as one of the most remarkable ever experienced for sudden changes of temperature. Until the 10th instant we were unable, owing to cold weather, to do any outdoor work, such as seed-sowing. A week of phenomenal heat followed, when the thermometer

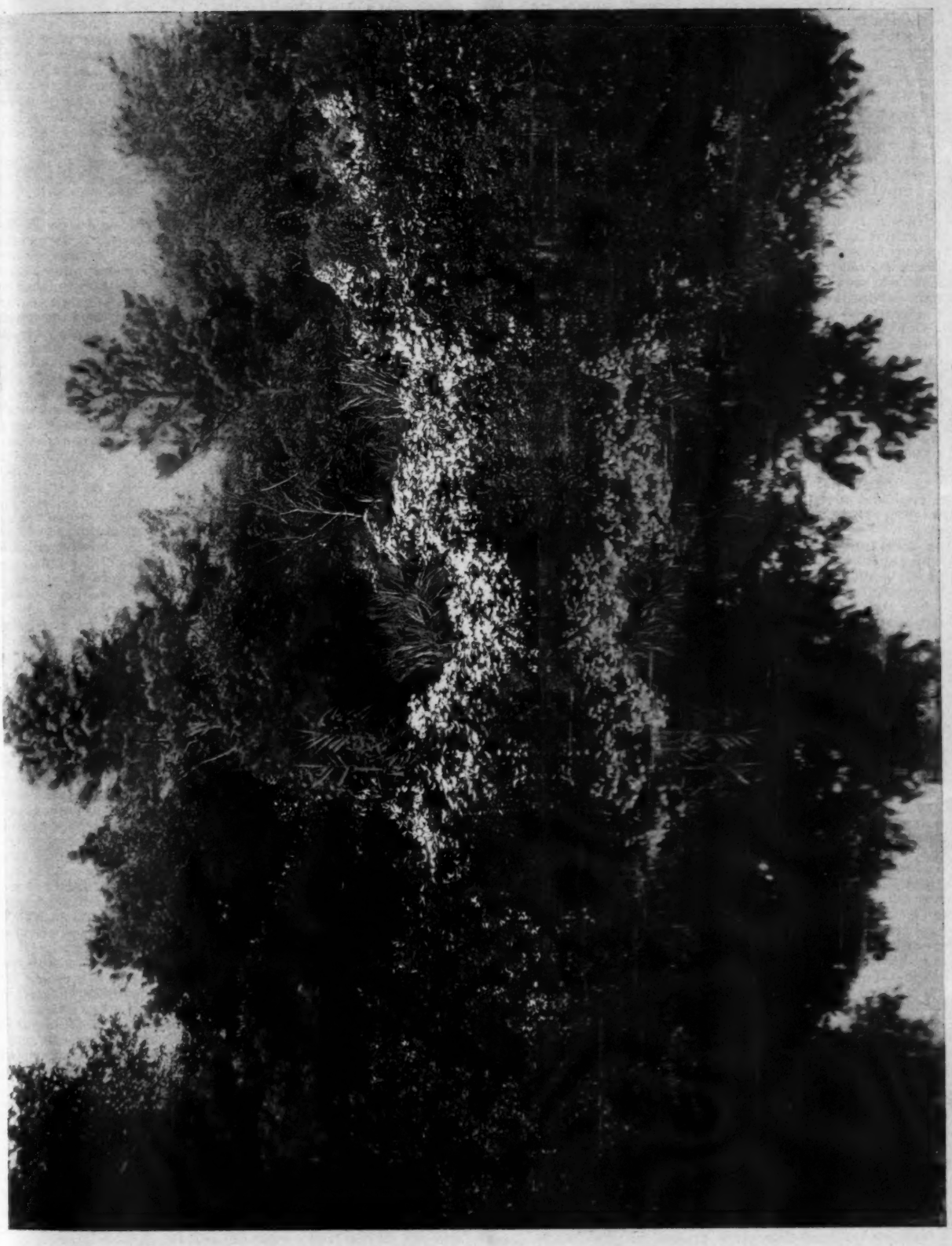

Fig. 32.—Clematis paniculata in a Wild Garden, at Westbrook, Long Island.—See page 182.

recorded ninety degrees in the shade on one occasion and on several days reached eighty or eighty-five degrees. Such forcing weather brought things forward with a rush, and although Peas, Onions and similar crops were sown from ten days to a fortnight later than in 1895, they are at this time more forward than they were a year ago. Now we are having a cold dry spell, with frost almost nightly, and vegetation is making slow progress. A more perfect season for seed-sowing could not be desired. There have been but two showers so far during this month. With warmer nights and more moisture crops will make rapid growth. The tropical weather in the middle of the month tempted many to plant large patches of Sweet Corn and Beans in this locality. Each year some of these crops are sown at this time, and they are always cut to the ground by frost by the middle of May. Last year there was a killing frost on May 17th, when all tender crops were destroyed. In this part of New England it is not really safe to plant out such vegetables, as Tomatoes, Peppers and Egg-plants, before May 20th. We prefer to have good stocky plants in cold frames until that date, and there we feel they are safe, whereas by planting out a week earlier there is uncertainty about their safety whenever the night turns chilly and the weather-vane points north or north-east.

Our early sowings of Peas have recently been earthed up a little and pea-brush placed among them; the ground will require frequent stirring with the hoe or cultivator to loosen the surface and keep down weeds. An iron rake drawn over the ground between rows of seeds when they first appear will stir the ground nicely and destroy multitudes of almost invisible weeds. Occasional sowings of such kinds as Stratagem, Heroine, Champion of England and Shropshire Hero have recently been made, the seed of these being covered more deeply than at our earliest sowing. Peas do much better sown while the ground is comparatively cool, as they naturally prefer a cool and moist climate. Later batches sown after hot dry weather sets in never give such good returns as those planted earlier. For sowings made after this time we choose our moistest ground, and it is helpful to mulch between the rows with grass or meadow hay. Mulching serves a twofold purpose in keeping the ground moist and cool. Where seaweed is obtainable it is one of the best things to use for this purpose, and it is also excellent for protecting Celery kept in trenches during the winter. A friend sent us on April 15th some fine heads of Boston Market Celery grown on Cape Cod and preserved in this way.

We find it risky to sow any Sweet Corn or String Beans before May 10th. Sowings made much earlier have come through all right, but the later-sown ones give better returns. Our earliest batch of String Beans in frames is now showing flower. A later sowing made in sashes from which Violets were taken are in second leaf. The sashes are thrown off these during the daytime, but it will be necessary to cover them at night for some time. Our earliest batch of forcing Erfurt Cauliflower is now giving some nice heads for cutting. These and, indeed, all vegetables in frames require plenty of water and stimulants. The ground will require occasional stirring among Lettuce, Carrot, Beet and other crops in frames, and weeds must be allowed no foothold. Artificial pollination will make early Cucumber set better and swell faster. We make our first sowing of these and of Melons in the open about May 6th, scooping out a hollow space for the seeds, which we cover with a sixteen by twenty-four sheet of glass. This is kept on until the plants are well established, ventilation and water being afforded as required. To those who do not possess hand sashes or other protecting appliances this will be found a cheap and useful method, and the plants do decidedly better than if started in pots or turf in heat and then transplanted.

Onions raised in boxes have recently been planted out in rows eighteen inches apart, allowing six to eight inches between the plants, according to the variety. Onions do so much better pricked out that we purpose relying on this method exclusively in future. Not one-fourth of the seed necessary to sow the rows is required, and, although a little time is needed to set out the plants, it is more than counterbalanced by that saved in thinning and weeding those treated in the regulation way. Some persons object to large-sized onions, and where this is the case it is best to stick to the old method. Onions like the ground pretty well primed, but on no account should it be allowed to become baked. The hoe must be kept constantly used in the cultivation of these and all other vegetable crops at this season, before weeds make any headway.

Our first batch of Celery was pricked off into boxes some time ago, and is now ready to transfer to a frame, from whence it will be planted in the open about the end of May. We have recently made a sowing of Boston Market, Giant Pascal and Kalamazoo for a winter crop. The ground now occupied by early Peas will be utilized for this Celery later in the season. A sowing of Golden Self-blanching Celery made now will give some fine heads in the fall. This variety rusts very badly during hot weather if not kept well watered. Sown now it will give good solid heads until Christmas. This is a suitable time to make sowings of Sweet and Pot Herbs, Brussels Sprouts, Savoy and Drumhead Cabbage, Leeks and Okra. Martynia we sow about the end of May. Successional sowings of Beet, Lettuce, Radish and Turnip may be made, and if Parsley has been forgotten in the spring rush, a row of it may be sown now.

Tomatoes for the earliest outdoor crop have just been shifted into six inch pots, and fruit will be set on these before they are planted outside, insuring an early crop. The plants for the main crop are now in boxes in a frame. It is better to thin or pot off the plants if they get crowded and are in danger of becoming spindling. Short stiff plants are best. A long lanky plant which needs a stake to support it before it is many inches high cannot be expected to give satisfactory returns. Plants now fruiting indoors require at this season an abundance of water, and we give liquid stimulants three times a week, in addition to scattering a handful of sheep-manure on the top of each pot once a week. The plants require looking over at least once in ten days, when superfluous growths, decaying foliage and necessary tying can be attended to. Our latest batch indoors has recently been placed in fruiting-pots, and fruit is just commencing to set on these. These plants, with others still bearing heavy crops, will furnish us with plenty of tomatoes until the middle of July, after which an outdoor supply can be relied upon until the middle of October.

Taunton, Mass. *W. N. Craig.*

Seasonable Work.

THE removal of many bedding plants to outdoor frames at this season relieves the overcrowded condition of the greenhouse, and affords the opportunity to harden off the plants before placing them in the open ground. The various cool-house plants grown for this purpose, for example, Geraniums, Verbenas, Ageratums, Alyssum, Sedums, Phlox Drummondii and many others of like hardiness, will be in better condition if placed out in a frame before this time, and from May 1st more tender plants may also be put in similar quarters. These will naturally require more care in ventilation for the first few days, so that they may not receive any check.

This partial clearance of the greenhouse will make it possible to shift on and spread various summer-blooming plants required for the conservatory next season. Among plants deserving special attention in this particular none are more prominent than the tuberous Begonias and Gloxinias, for while tuberous Begonias are valuable as bedding plants in some favored sections in this country, in the main they are more satisfactory for indoor decoration. Considerable space and light are needed for their full development, although some protection from full sunlight is also necessary when they are grown under glass. The young plants should be potted on before they become badly starved, for once stunted they seldom fully recover. The large-flowered garden varieties of the tuberous Begonias are not the only ones of value to the private grower, and well-grown specimens of Begonia Boliviensis, B. Chelsonii, B. Weltoniensis and B. Froebelii add much to the beauty and interest of a collection. The latter species is particularly striking, with its bold foliage and strong spikes of brilliant red flowers. Most of the Gloxinias should now be ready for their final shift to the pots in which they are to bloom, six-inch pots being generally large enough for this purpose. About the time these plants show bloom they will be benefited by an occasional watering with weak liquid-manure. Gesneraceous plants in general are shade lovers, and Gloxinias are no exception to the rule. In watering, the foliage should not be wet to any great extent, or the leaves become rusty.

Various relatives of the Gloxinias also demand attention at this season, among others Achimenes and Tydæa, both genera including many beautiful forms well adapted for conservatory decoration during the summer months. Large baskets filled with Achimenes would be a revelation of beauty to those not familiar with them, and they are not really difficult to cultivate. Thrifty young plants should be used for this purpose, and should be planted all around a wire basket of large mesh, the basket being lined with moss to retain the soil. Thorough watering is required by the Achimenes while in growth, and the basket should be hung in a partially shaded location and not exposed to strong draughts.

Cyclamens for next winter will also require attention now, and these plants should never be starved while young. Comparatively few growers save the old corms from one season to the next unless it be those of some particularly fine form, young plants being easier to manage and usually more satisfactory. Rather open soil and good drainage are essentials in the cultivation of Cyclamens, and perfectly clean pots should be used for them. Watering should be done carefully. Frequent light syringing is helpful during hot weather, but this should not be done late in the afternoon, as the foliage should be kept moderately dry at night. Plenty of fresh air and some shading are also necessary, and a sprinkling of chopped tobacco-stems spread among the pots will tend to discourage aphis and thrips.

Holmesburg, Pa. *W. H. Taplin.*

Spring-flowering Plants.

THE recent exceptionally warm weather has brought into bloom most of the early spring flowers with magical rapidity, and in a week the face of nature was transformed from winter sere to the bloom and beauty of spring. Fortunately, cooler days have followed without frosts to injure this growth, and there is promise of a favorable spring season. The past winter was exceptionally fatal as to plant-life, and many of the shrubs considered hardy have been injured sadly. Magnolia Soulangeana has all flower-buds killed, and many other of the smaller plants of various Magnolias have been severely killed back. I observed to-day the first flowers open on the plant of M. Kobus (Thurberii). This plant is quite an old one, and was presented to Dr. Thurber when it was named, but it has not bloomed till now. It is not one of the showiest species, but is a vigorous grower of compact habit and of brightest green in summer. The newer M. Watsoni has been killed to the ground. The plants were small, but were well established last year, and, indeed, it bore flowers last spring that were much admired, and it was considered a genuine acquisition to the list of garden shrubs. It may possibly prove hardy if protected in a sheltered position, and it would be of interest to learn how it has behaved in other localities.

Pæonia corallina and P. Wittmanniana are two of the rarer species of Pæony not often seen in cultivation, and belong to the very early-flowering type of which P. tenuifolia is the best-known representative. Neither of the first named has flowered here before, owing, as we thought, to tenderness of the early shoots; the buds were to be seen, but they did not develop properly, but it would seem now that the failure was due to lack of flowering strength, for, now that the clumps are well established, they are both about to flower. Several species of Pæony are great additions to gardens when they are obtainable, but, for some reason, we do not often see them in lists, probably owing to the greater demand for the showy garden forms of P. herbacea, but those that flower so early in the year have a value of their own. The flower-buds of these are now showing color, while those of the garden forms are scarcely to be seen above ground.

In years past we have noted the beauty of Puschkinia Libanotica, and each year it is among the very first to open its blossoms in the outdoor garden, defying frost and snows, and only waiting for a few bright days to expand its pretty flowers. It is very similar to a Scilla, and might be easily taken for one, but the bells are of a very pale blue, almost white, with a distinct dark blue stripe down each division of the bell-shaped perianth. Here it is not only hardy, but seeds freely each year, and from a half dozen bulbs first planted we have now as many as fifty large and small. The seeds seem to grow freely where they fall, for they have never been collected or sown in the regular way, but with the non-disturbance of the soil by digging or otherwise we have quite a little colony of this pretty spring flower.

I think, also, that for the past three or four years the pretty Fritillaria aurea has been noted for its good ways, and the temptation is strong to speak of it again now; it is the only one of the Fritillaries that I know that will thrive in the outdoor garden in this latitude. F. Meleagris will exist for years, but not so as to give any pleasure to its possessor, and the Crown Imperials are very uncertain in their habits, but F. aurea has been perfectly happy here for the past three years. The color of the flowers is a bright yellow outside, checkered with black squares within in a very pretty fashion. It is also very easy to increase from the number of young bulbs formed round the older ones. The western F. pudica is also one of the prettiest of the native Fritillaries, but is too tender for this section to do well; it is a modest little flower with a charm all its own, but is best grown in pots indoors in winter.

There has always lingered a suspicion as to the absolute hardiness of the Eremurus in an open, much exposed location, and until last fall we have always given it a protection of straw, but by accident this was omitted last November, and many were the doubts as to the result. When spring came we had deep frost without snow for protection, and many things suffered in consequence, but not so the Eremuri, for they are coming up stronger than ever and seem to have enjoyed the cold on the whole. The two species we have are E. robustus and E. Himalayacus, but soon we hope to try more of them, the difficulty being to get them in good strong roots of the rarer kinds, the demand being apparently greater than the supply. There need be no more doubt as to the hardiness of these fine border plants.

A plant long known in gardens as Amaryllis Hallii here in New England proves to be Lycoris squamigera, and under the latter name has been recently made plentiful by importers of bulbs from the east. As A. Hallii it has been cultivated in a garden at New Bedford for many years, and was possibly brought there by some of the trading ships that used to start from that port, and as a hardy bulbous plant it has great merit. It is the only really hardy member of the genus that we can cultivate here, and there was a doubt as to whether the bulbs recently obtained were identical with the older ones long known here. I am glad to see that they have come through the winter without any harm, with no protection whatever, and are growing freely, though not large enough to bloom this season; there appears to be no doubt that we can depend on the two being identical and within easy reach of cultivators.

South Lancaster, Mass. *E. O. Orpet.*

[Lycoris squamigera was originally brought from China by Dr. George R. Hall, of Bristol, Long Island, and was distributed as Amaryllis Hallii by the Messrs. Hovey, of Boston. The plant was described and figured in Garden and Forest, vol. iii., p. 176.—Ed.]

Flower Garden Notes.

AZALEAS which have been forced for Easter decorations should now have all weak shoots and premature growth which usually accompanies the blooms cut out. The whole plant should be evened over, and, if trained, tied into shape. If grown continuously in pots this is a good time to repot them. Azaleas, however, are slow-growing plants; they do not need shifting often, and generally, if some of the old soil is taken away and some fresh added, the plants will continue in good condition for two or three years, and old plants often for a longer time. They must be repotted when thoroughly pot-bound; and in such cases it is advisable to chip away a quantity of the old soil, leaving a rough surface about the ball of earth so that it will easily compact with new soil. As close a shift as possible is sufficient, so long as the new soil can be worked in firmly between the pot and the ball. It is better, however, where it is possible to devote a properly prepared piece of garden soil, to plant them out for the summer. They do not need less care; they simply do better when the conditions of success are understood. A rather tenacious loam is best, in which abundance of well-decayed leaf-soil is well composted. The ball of earth should be stirred as recommended for potting, and the new soil worked in about them quite firmly, scarcely more than covering the top of the ball. A basin should be left in which water will collect.

Astilbe Japonica and the newer Spiræa astilboides and their varieties, now out of bloom, may be cut up and planted out. With two years' growth these will be ready to force again. If this practice is followed there should be no need of importing roots for forcing, since as good clumps can be grown here as in Europe.

The practice of growing Deutzia gracilis in pots is a good one. They can be grown several years by shifting on from small pots to ten-inch size. Beyond this size they become unserviceable, when they can be turned into the shrubbery. By striking a few cuttings of green shoots taken at this time it is quite easy to keep up a succession.

Erica Caffra, var. densa, and E. melanthera, two easily forced Heaths, may be trimmed into shape and turned out for the summer. Heaths are usually recommended for shaded places, but we have found these do quite well in the full sun, providing they are plentifully supplied with water.

Cytisus racemosus is now extensively used for spring decorations. The long stems, clothed with graceful racemes of fragrant yellow pea-like flowers, are effective among foliage plants. The Cytisus is easily grown and bears hard treatment. Such as have been in bloom may be cut back and turned out, providing they have balls of earth, but young plants struck this winter are better if kept in pots. Shifted along from three

to six inch pots they grow into a convenient size for almost any kind of decorative work. To some of the plants we allow only one stem, and these make a perfect column two feet high. Others are stopped and grow mostly into pyramidal form, and some into compact bushes. Old bushes soon get leggy and out of shape. C. elegans, the silver-leaved kind, is by far the handsomest. It is generally found difficult to root. By stumping an old plant in and taking stem cuttings with a heel we have never had any difficulty in rooting it.

A few small plants of Rhodotypus kerrioides have been blooming in a cold frame since the first of April. No doubt, this handsome Japanese shrub would be well adapted for forcing in the same way as Deutzias, and would be a valuable addition to the limited number of shrubs available for this purpose; so also will the Crimson Rambler Rose. All who saw the specimen exhibited by Mr. Jackson Dawson, of the Arnold Arboretum, at the spring show of the Massachusetts Horticultural Society were delighted with it.

Old stools of Japanese Anemones in pots are starting in cold frames. Last spring they were repotted, and we intend to carry them through this season with a top-dressing of rich soil and liquid-manure later. We shall keep them in cold frames until all danger of frost is past, as experience has shown that they easily become blighted by even light spring frosts. Such disfigurement will last a whole season.

Violets and Carnations will be planted out as soon as the work can be reached. Such frost as there shall yet be will not injure them. Of Violets we shall grow only the Farquhar for dark blue. This Violet will entirely supersede the Marie Louise. It is superior in size of bloom and length of stem, and in color it is equal. So far as tested it has proved easy to manage.

The bulk of stock used for winter blooming in the greenhouse can be planted out for the summer. In this respect we have the advantage of the English gardener, who must grow many of these plants in pots under glass. Mignonette, Sweet Alyssum and Shirley Poppies will be sown, and Stocks, Asters, Coreopsis Drummondii, Scabious, Phlox cuspidata, Verbenas, Marigolds, Zinnias and other useful annuals for cutting will be planted out as soon as settled weather comes. These we keep together. Last year we found Caryopteris mastacanthus valuable for cutting in the autumn, as well as being a useful plot-plant. The graceful sprays of sweet-scented lavender-blue flowers are very effective.

Wellesley, Mass. *T. D. Hatfield.*

Helleborus orientalis.—Besides the Christmas Rose, the genus Helleborus contains several very showy and attractive species, known in England under the name of Lenten Roses, because they flower during the Lenten season. With us they are somewhat later unless grown in a cool frame, when they may be had in great profusion at Easter. The species most beautiful as well as most varied is the not uncommon Helleborus orientalis, which grows somewhat taller than the Christmas Rose, producing more slender and leafy stems, each bearing several large rose-colored flowers. As in the case of all Hellebores, the sepals form the showy part of the flower; they are from three-quarters of an inch to an inch long, rounded and spreading, of a dull rosy color, persistent, and gradually becoming green. The leaves are evergreen, smaller, and with more narrow segments than those of the Christmas Rose; pedate, with about nine oblong-lanceolate segments, which are coarsely toothed or serrated. There are some beautiful varieties, merely differing in size and color, such as Guttatus, with large white flowers, the sepals of which are dotted all over with small rose-purple spots; Punctatus, with smaller and more numerous dots; Antiquorum, almost pure white, slightly tinged with red and greenish gray. As all the Hellebores are woodland flowers, delighting in moist vegetable soil, in rocky woods, where the air is continually cool and moist, they should be treated accordingly. The leaves are best preserved in somewhat shady positions, but the plants flower more abundantly in moderately sunny places, if not too dry. Rocky borders of small streams, under deciduous trees, offer many opportunities for growing these charming plants successfully in ideal positions.

Anemone ranunculoides.—One of the most common, as well as most attractive, spring flowers of northern Europe is the Golden Windflower, Anemone ranunculoides, which flowers considerably later than the common white Windflower, among which it grows. It is seldom, if ever, found in low, flat woods, preferring steep hillsides, where it grows in rich leaf-soil in comparatively deep shade. The leaves are smoother, less cut than those of A. nemorosa, palmately three or five parted, with deeply toothed almost trifid segments. The stem-leaves, forming the involucre, are tripartite, petiolate, shiny green. The flowers, which, in favorable positions, measure nearly an inch across, are bright golden-yellow, from one to three on a stem. The plant grows from five to eight inches high; the creeping rhizome is rather thick and fleshy, producing several leaves. I have never seen this handsome species in American gardens, but it would, however, prove a very charming acquisition, providing its naturalization is possible.

Newark, N. J. *N. J. R.*

Pitcairnia.—This genus includes many handsome plants, and although they are easy to grow and have large showy flowers and bracts, specimens are rarely seen outside of a botanic garden. The genus belongs to the Pineapple family and is nearly related to the Tillandsias. While they come from tropical America they are grown here in a temperature ranging from fifty to fifty-five at night, along with Billbergias, Æchmeas and Tillandsias. They do best in a position where they have plenty of light, and in bright weather require frequent syringing. The compost for potting them should consist of fibrous loam, chopped fern-root, leaf-mold and sand in equal parts. It is important to have the pots clean and well drained, as the plants need plenty of water while they are growing. For the past three or four weeks a large plant of Pitcairnia Altensteinii has been attractive and much admired. The plant has a very short stem, but it has graceful leaves which measure three feet and a half in length and about two and a half inches in breadth. The inflorescence is a simple subspicate raceme, and the peduncle measures two feet in length. The bright red bracts on the peduncles are about two inches in length, and long after the flowers are gone they retain their clear color. Indeed, the bracts are more showy than the flowers. The corolla is long and narrow, measuring about three inches, and of a whitish color. This showy Pitcairnia was introduced from western Venezuela in 1840. It is sometimes found under the generic name Puya and also as Pitcairnia undulatifolia.

Botanic Garden, Harvard University. *R. Cameron.*

Correspondence.

Potato Blight.

To the Editor of Garden and Forest:

Sir,—I have just read with interest Bulletin 113 of the Cornell Experiment Station. This bulletin treats of Potato diseases, and among others describes and figures the "early blight" as it occurs at Ithaca. My interest in this topic was increased by the fact that I have now in press a bulletin on Potato blights, the publication of which has been delayed some time awaiting engravings. Among these illustrations which are to appear in our bulletin is one agreeing essentially in the diseased characters of the leaf with the beautifully colored plate which Mr. Lodeman has labeled "Early Blight." The conditions represented in our leaf (and they are unquestionably the same in the leaf figured in the Cornell bulletin) are, however, distinctly different from the "Macrosporium blight," or "early blight," as that disease has been described in various parts of America, France, New Zealand and Germany. It will only add more confusion to a subject already sadly confused if we do not sharply distinguish the two disorders. To this in my lectures before students and farmers' institutes during the past winter I have used the name "Tip-burn" of the potato, to designate this latter trouble as distinguished from the true "early blight" or Macrosporium "spot disease." In fact, we must distinguish at least four, and, perhaps, five, distinct forms of the so-called "blighting" of Potato leaves, which commonly occur in the north-eastern United States. So far we have names for but two. Of these the "late" or Phytophthora blight is now quite generally recognized and distinguished. Beyond this all is confusion, since the term "early blight," as popularly used, has been broadened to cover all forms of premature dying Potato leaves from causes other than attacks of the fungus Phytophthora infestans. I was thoroughly impressed with this fact during a trip made to Wisconsin last August, in which I had opportunity to examine blighting Potatoes at various points along the way. Upon my return I wrote to each of the experiment stations in north-eastern United States asking for specimens of Potato leaves showing the Macrosporium or "early blight" as it occurred in that locality. The material thus collected, together with a considerable amount collected in other ways during the past four years, has been carefully studied by my assistant, Mr. Tracy, and myself. The diseased conditions represented clearly fall into several classes as to cause. These are:

First: The "late blight" or mildew caused by the fungus Phytophthora infestans.

Second: The "early blight," Macrosporium disease, or "leaf spot" disease, due to the parasitic attacks of the fungus Macrosporium Solani, E. & M. This is characterized by the appearance of numerous sharply defined dark spots scattered irregularly over the leaf. These spots, enlarging slowly, dry, and the tissue is by this drying thrown into irregularly concentric elevated rings. The character of these rings is peculiar, and forms a valuable method for hasty identification of the disease as it usually occurs. These spots may or may not originate from flea-beetle punctures. It is agreed by all investigators that this fungus most readily attacks plants or leaves that have passed their period of greatest vigor. It is, as Dr. Sorauer says, one of the "Schwächeparasiten," but, nevertheless, a most destructive parasite when well established in a field.

Third: "Tip-burn," a disease characterized by the drying of the leaves at the tips and margins, not necessarily associated with any fungus attacks, but attributable to physiological conditions surrounding the plant, especially to dry hot weather with insufficient water-supply, and aggravated by insect attacks or any other conditions which lessen the vigor of the plants. This is clearly the trouble figured in the Cornell bulletin as "early blight." Mr. Lodeman's account of the physiological conditions leading to this disease is excellent and in accord with my own observations, but, as already indicated, we must clearly distinguish this third disease from the second, both as to cause and appearance. Of course, various fungi and bacteria capable of existing as saprophytes soon invade the tissue which has died from "tip-burn," and these soon complicate and often aggravate the disease. As shown in the material examined, the nature and extent of these secondary fungus invasions varies considerably in different localities according to conditions. These invading fungi are exceedingly interesting, and have received considerable study; a discussion of them would, however, be out of place in the present summary.

Fourth: "Arsenical poisoning" from Paris green or other arsenites applied as insecticides. In case of extremely strong application of these arsenites the leaf may be entirely killed or large areas "burned" within a short time. Usually, however, its action is slower and longer-continued. Its effects are then apparent as dead spots centering about flea-beetle punctures or other mutilations in the leaf. These spots continue slowly to enlarge for some time, and, as a result of the slow death and drying of the tissues, the surface of each is thrown up into distinctly concentric elevations or ridges forming "ringed spots" so similar to those caused by the attacks of Macrosporium Solani that they are extremely deceptive. There is, however, a distinctly different color to the spot, as a rule, and the rings are more regularly circular in the poisoned spots. These arsenical poisonings are of very common occurrence, and are unquestionably responsible for much of the confusion regarding "early blight."

Fifth: Dead spots sometimes occur on the margins of leaves or surrounding flea-beetle punctures or other injuries which are not invaded by fungi, and do not seem attributable to arsenical poisoning. They develop the characteristic rings, and resemble spots caused by the Macrosporium or the arsenical poisoning, but are often, at least, due to dry heat, as suggested by Dr. W. C. Sturgis in the Report of the Connecticut Experiment Station for 1894. In this case they should be associated as to cause with "tip-burn" rather than with "early blight."

Experiment Station, Burlington, Vt. *L. R. Jones.*

Recent Publications.

Nut-culture in the United States. United States Department of Agriculture. 1896.

Six years ago Professor H. E. Van Deman, who was at that time Pomologist of the Department of Agriculture, sent out circulars of inquiry to all parts of the United States where there have been any systematic efforts at planting nut-bearing trees for the production of their fruit. Wild nuts have always been so abundant in this country that there has been little need of cultivating the native sorts. Our native pecans, shellbarks, walnuts and chestnuts vary widely in size and quality, but it has been the popular belief that a long time would be required to raise the improved varieties in any quantity, since propagation is slow and grafting in many instances difficult. Nevertheless, there have been many individual instances where success has been won with improved kinds of our native Chestnuts and the foreign sorts, with the English or Persian Walnut, with the Almond and the Pecan, and there have been hopeful experiments with the Shellbark Hickory and in the extreme south with the Cocoanut. A very good account of what has been really accomplished will be found in this book, which is a compilation of the answers to the replies made to Professor Van Deman's circular, and published by the Department of Agriculture. The text makes about one hundred quarto pages, to which are added sixteen full-page plates, some of them colored, and there is a carefully prepared index. The cultivation of the Almond is already established in southern California, and seedlings of excellent quality are constantly produced, and it seems to have become a matter of common observation that the best variety in any locality is some seedling which originated there. The cultivation of the Persian Walnut, too, has become well established in southern California and the exports are increasing annually. Perhaps the largest cultivated Walnut grove in the world is one in California, which contains seven hundred acres. The account of hybrids between different species of Walnut from eastern Asia with the California Walnut, our Black Walnut and the Persian or English Walnut suggests the possibility of producing trees of widely varying form and habit, although no distinct improvement in the fruit has yet been accomplished.

Perhaps the most interesting chapter in the book is that on the Hickory, especially the section which relates to the Pecan, a tree which equals in importance, if it does not surpass, the Persian Walnut and the Almond. This tree will thrive over a large area and the fruit varies very considerably, so that by selection it is possible to get large, thin-shelled, delicately flavored nuts. Large orchards are being planted, and in many cases trees which bear inferior nuts in the forests are cut out so as to leave room for those which bear better ones. A grove of this sort—that is, a grove made by thinning out a forest of 450 acres on the Guadaloupe River, in Texas—has produced $2,000 worth of nuts in a year. One of the plates represents a wild Pecan-tree which had been top-budded four years earlier with five choice varieties, and it already shows a vigorous head of young shoots bearing nuts. If this method is practicable with large trees it will not be difficult to utilize the abundant wild trees of the south for the production of choice nuts. A good account of the experiments with Shellbarks is also given, and the story of the improved varieties of Chestnuts, with which the readers of this journal are familiar, is told at length. It seems probable, too, that from Delaware southward the English Hazelnut can be successfully grown, and there are some of our native Hazels in the north which bear nuts as large as imported filberts, with thin shells and altogether of superior quality. Many of the species of Pine on the Pacific slope, including Arizona, have seeds that the Indians use as food, and they are marketed in large quantities in some of the cities of California. One of the plates of this book is devoted to the seeds of these Pines, twelve different sorts being figured. Some of them are large, soft-shelled, of a delicious flavor, so that they are valued both for dessert and confectionery purposes wherever they can be had. These nuts are generally harvested by the Indians, who heat the cones until they rattle out, having been roasted in the process. Whether any of these species will reward the planter if brought into cultivation is a matter of the merest conjecture.

Little needs to be said of the miscellaneous nuts, native and imported, several of which are grown in a small way in different parts of the country. The general subject, however, is most interesting, and this bulletin is valuable for bringing together in a condensed form about all that is known of it at the present time. The truth is, that the sum total of our knowledge is now very slight indeed. Few fields offer greater attractions to the workers in our experi-

ment stations than this, and the time ought not to be far distant when nut-trees can be propagated with the same ease and rapidity as our ordinary orchard fruits.

Notes.

Egyptian onions are already seen in the wholesale markets, the first shipment of 250 crates having arrived a few days ago. The Havana product is about out of market, but nearly 30,000 crates came from Bermuda last week.

Pineapples, from Cuba, continue to come in limited quantities, about 5,000 barrels having reached this port during last week. The extremely high prices commanded by the earliest receipts of small lots of this fruit are broken in view of larger supplies. From eight to eighteen cents apiece is now the rate by the hundred. The first cargo shipments are expected by the middle of May, when the Bahamas will also contribute to the supply.

New potatoes are now coming from California, Louisiana, Florida, Cuba and Bermuda, and prices at wholesale range from $6.00 to $10.00 a barrel. The highest grade of sweet potatoes, from Vineland, costs $5.00 in barrel lots. During last week 16,072 barrels of domestic potatoes were brought into this city, and since October 1st 1,091,516 barrels have been sold here, besides 5,986 sacks from Europe and 11,805 barrels from Bermuda.

The apple export season is now nearly ended, 154 barrels having been shipped from New York last week, while 267,319 barrels were forwarded to Europe from this port since September 1st. For home supply 4,622 barrels were received here during the six days ending with last Saturday, and since September 1st, 687,212 barrels. Choice Ben Davis apples now cost the retail buyer $5.50 a barrel, Baldwins $4.50, Roxbury Russets $4.00, and Golden Russets $3.50.

More than two hundred tons of cut Narcissus flowers are sent every year from the Scilly Islands to England. In addition to these, the bulbs raised here, which have excellent free-flowering qualities, constitute an important branch of trade. Mr. F. W. Burbidge states that in the crowded manufacturing centres of England these flowers and bulbs are as cheap as they are beautiful, and are largely bought by artisans, so that flower-farming in the Scilly Islands, at least, is not a business which depends for support on the luxurious rich, but one which brings freshness and beauty into the homes of the people.

The Spinach Leaf Miner is a small white maggot which tunnels through the leaves of Spinach, Beet and Pigweed, and it has been multiplying with such rapidity in the market-garden district of Long Island that the cultivation of Spinach will have to be abandoned unless it can be controlled. There seems to be no period of the year during which insecticides can be applied with success, and the only feasible plan of controlling it is to destroy all the Pigweed and plow old Spinach fields late in the fall and early in the spring. A bulletin has just been issued from the Geneva Experiment Station on the subject in which the insect is fully described and figured.

We have received a copy of the *American Florist Company's Directory*, a list of the florists, nurserymen and seedsmen in the United States and Canada, to which is added a list of the park superintendents and directors of botanical gardens and cemeteries. Besides this there is a comprehensive catalogue of the Chrysanthemums, Cannas, Roses and Carnations which have been introduced into cultivation in this country, together with the names of the introducers, the date of introduction and a brief description of each plant. A list of the officers of the most important horticultural societies in the country, with a brief history of other important associations in some way connected with the nursery, flower and seed trade, complete this compact and highly useful volume.

A bulletin of the Maine Experiment Station makes the following record of some of the comparatively new varieties of wrinkled Peas as tested last year. Station (Gregory), moderately vigorous grower, five to six peas in a pod, quality good, edible in from forty-five to fifty-five days from planting; Morning Star (Childs), growth rather less vigorous, five or six peas in a pod, quality excellent, edible in from forty-five to fifty-five days; Exonian (Thorburn & Co.), vines of medium height, but very slender, foliage noticeably light-colored, six peas to the pod, edible in from fifty to sixty days; Early Woodside (Smith), rather dwarf, six peas to the pod, quality good, edible in from sixty to seventy days; Echo (Burpee), moderately vigorous, seven peas to the pod, edible in from sixty-five to seventy-five days; Nott's Excelsior (Maule), dwarf habit, about a foot high, five or six peas to the pod, maturing in from fifty to fifty-five days, an excellent pea.

The March issue of the *Bulletin de la Société Centrale Forestière de Belgique* contains an interesting note on a plantation of White Pine (Pinus Strobus) about two and a half acres in area, situated near the railway station of Gedinne, in the province of Namur. The trees, which have been planted twenty-five years, have already been thinned three times since 1888, the thinnings having been sold for six hundred francs, or in round numbers $125. Two thousand two hundred trees are now standing, and their measurement shows that the plantation contains three hundred and fifty-four cubic metres of timber, equal to an annual growth of more than fourteen cubic metres over the whole area. It is stated that the White Pine is distinguished in Belgium by its rapid growth and hardiness, resisting the severest cold and the effects of late spring frosts, and growing, when mixed with other trees, more rapidly than any of its associates.

The eighth report of the Mississippi Experiment Station gives the results of a series of experiments with grasses and forage plants which have been conducted there now for eight years past for the purpose of ascertaining what plants will restore fertility to the soil most rapidly while giving fair returns in hay or pasture, which ones will make the best permanent meadow, which ones are most suitable for permanent pasture, especially for winter grazing, and which hay-producing plants are of the best temporary use. Five hundred and eighty-six species have been tested on different varieties of soil, the seeds having been sown under different conditions in all parts of the state. When this work was begun it is said that no hay was grown in Mississippi except that used for home consumption, and thousands of tons were brought into the state every year. The average yield per acre has since then been more than doubled, and in 1895 it was eighty-four per cent. above the average yield of the whole United States and 114 per cent. in excess of the average yield in the northern and central states of the Mississippi valley.

In the last number of *The Country Gentleman*, Mr. S. D. Willard, of Geneva, states that the extreme cold weather of January has proved very disastrous to the orchards in the great fruit region of western New York. Of Plums, the French Damson, which is grown in a limited way, is the only variety which is likely to give any crop at all. Such entire failure has never been known since the growing of plums became a recognized industry in this section, and it proves that the fruit cannot endure a temperature of twenty-two degrees below zero. The extremely dry autumn which left no moisture in the soil to supply the demands of evaporation may have aided in the injury, and yet the trees held their leaves very well and developed a good stand of fruit-buds and were in apparently good condition to withstand such winters as are usually experienced. With the exception of Hill's Chili, few varieties of Peach-trees show a single live bud. Sour Cherries will set an average crop, while of the sweet varieties Elkhorn and Windsor are in much the best condition. This last is a comparatively new variety which originated in Windsor, Ontario, and was disseminated by Ellwanger & Barry. It is of fine quality and beautiful appearance and its hardiness will give it additional value.

Andrew S. Fuller, widely known as a writer on subjects related to agriculture and horticulture, died suddenly of heart failure on Monday at his home in Ridgewood, New Jersey, in the sixty-eighth year of his age. Mr. Fuller was agricultural editor of the New York *Weekly Sun* for more than a quarter of a century, and at different times he had been connected with *The Rural New-Yorker*, *The Tribune*, *The Agriculturist* and *American Gardening*. He was the author of several popular books on arboriculture, small-fruit culture and the propagation of plants, and he had recently completed a treatise on nut-culture, which he considered his most important work. He was an authority in some branches of entomology, an enthusiastic student and experimenter in his chosen field, and was absorbed in his favorite occupations until the very hour of his death. He had gathered about him at Ridgewood a choice collection of trees, shrubs and herbaceous plants, which he grew with rare skill and distributed with unfailing liberality. His orchard of nut-bearing trees was especially interesting, and it is sad to think that the world will lose the benefit of Mr. Fuller's trained habits of observation as he watched the behavior of the numerous varieties he was testing and reported on the value of different modes of treating them.